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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/328,972	06/09/1999	STEPHEN D. FANTONE	0196/US	7571

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EXAMINER

SMITH, ZANDRA V

ART UNIT	PAPER NUMBER
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2877

DATE MAILED: 09/29/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/328,972

Applicant(s)

FANTONE ET AL.

Examiner

Zandra V. Smith

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 24-26 is/are allowed.
- 6) ☒ Claim(s) 1-11, 15-17 and 19-23 is/are rejected.
- 7) ☒ Claim(s) 12-14 and 18 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-6, 8, 10-11, 15-17, 20-23 are rejected under 35 U.S.C. 102(b) as being anticipated by *Kuhel (5,004,346)*.

As to **claims 1, 10, 15, and 20**, Kuhel discloses a method of examining an optical component, comprising:

means for generating an output beam having a predetermined wavefront profile (col. 6, lines 8-12 and col. 10, lines 50-67);

means for translating and relaying the output beam along the optical axis with respect to the surface such that the wavefront impinges on the tested element from a predetermine direction and then is reflected to travel opposite the predetermined direction as a distorted wavefront containing distortions that vary in accordance with the topography of the surface and the position of the output beam (col. 6, lines 38-50); and

means for sampling the distorted wavefront profile at predetermined locations and determining local deformations corresponding to the sampled locations (col. 6, lines 55-65 and col. 7, lines 30-42).

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Kuhel differs from the claimed invention in that a support is not specifically disclosed, however since the object is an optical component and would need a support to remain stationary during testing, the limitation is inherently met.

As to **claims 2-3, 16-17, and 21**, Kuhel discloses everything claimed, as applied above, in addition analytical means are provided for representing the topography of the surface with a mathematical approximation comprising a series of coefficients and variables, calculating the value of the coefficients based on the local deformation of the wavefront at at least one position of the source with respect to the surface and the analytical means includes means for performing optimization analysis using the values of the coefficients calculated for each position of the source and test surface to arrive at a final value for the coefficients (col. 7, line 50-col. 8, line 42).

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As to **claim 4**, Kuhel discloses everything claimed, as applied above, in addition the predetermined wavefront is a plane wavefront (col. 6, lines 11-12).

As to **claim 5**, Kuhel discloses everything claimed, as applied above, in addition the predetermined wavefront comprises a spherical wavefront (col. 6, line 52).

As to **claim 6**, Kuhel discloses everything claimed, as applied above, in addition a light source and collimating optics are provided (col. 6, lines 38-45).

As to **claim 8**, Kuhel discloses everything claimed, as applied above, in addition the collimator lens is a positive lens (see fig. 1).

As to **claim 11**, Kuhel discloses everything claimed, as applied above, in addition a beam expansion section is provided (col. 6, line 10).

As to **claims 22-23**, Kuhel discloses a method of examining an optical component, comprising:

means for generating an output beam having a predetermined wavefront profile (col. 6, lines 8-12 and col. 10, lines 50-67);

means for translating and relaying the output beam along the optical axis with respect to the surface such that the wavefront impinges on the tested element from a predetermine direction and then is reflected to travel opposite the predetermined direction as a distorted wavefront containing distortions that vary in accordance with the topography of the surface and the position of the output beam (col. 6, lines 38-50);

reflective means positioned with respect to the surface (see fig. 3); and

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means for sampling the distorted wavefront profile at predetermined locations and determining local deformations corresponding to the sampled locations (col. 6, lines 55-65 and col. 7, lines 30-42).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 7, 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over ***Kuhel*** (5,004,346).

As to **claim 7**, Kuhel discloses everything claimed, as applied above, with the exception of a well corrected objective lens, however since the system views interference errors down to a quarter wavelength the inclusion of a lens that is as aberration free as possible would have been obvious to one having ordinary skill in the art at the time of invention.

As to **claim 9**, Kuhel discloses everything claimed, as applied above, in addition figure 3 discloses an embodiment that includes reflective means positioned with respect to the surface to facilitate measurement of lenses and other optical components. It would have been obvious to one having ordinary skill in the art at the time of invention to include a reflection positioned behind the surface to allow measurement of object that do not reflect light.

Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over ***Kuhel*** (5,004,346) in view of ***Schwomma*** (3,982,835).

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As to **claim 19**, Kuhel discloses everything claimed, as applied above, with the exception of a strobe or pulsed light source, however to do so is well known as taught by Schwomma. Schwomma discloses an interferometric system for shape determination that includes a pulsed light source (col. 8, lines 66-67). It would have been obvious to one having ordinary skill in the art at the time of invention to prevent blurring in the interference pattern caused by movement in the system.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Kitabayashi et al. (4,743,117) ; Tronolone et al. (5,416,586) ; Huang et al. (5,625,454)

Response to Arguments

Applicant's arguments with respect to claims 1-21 have been considered but are moot in view of the new ground(s) of rejection.

Allowable Subject Matter

Claims 24-26 are allowable over the prior art of record.

Claims 12-14, and 18 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: the prior art of record, taken alone or in combination, fails to disclose or render obvious the inclusion of a lens array or a 2d lens array, in combination with the rest of the limitations of the claims.

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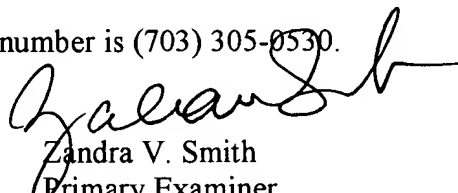
Fax/Telephone Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Zandra V. Smith whose telephone number is (703) 305-7776.

The examiner can normally be reached on 8:00 a.m. - 4:30 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frank G. Font can be reached on (703)308-4881. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-0530.


Zandra V. Smith
Primary Examiner
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